Disease: Botulism* (Foodborne)**

*** Botulinum toxin is a possible bioterrorist agent. See "Special Considerations for Bioterrorism" beginning on page 4.**

Clinical Features: Food borne botulism results from the ingestion of preformed neurotoxins. Initial symptoms may include vomiting with constipation or diarrhea. Onset of neurological symptoms may be gradual or sudden and early symptoms may include diplopia, blurred vision, dysphagia, and dry mouth. There may be a descending motor weakness sometimes progressing to complete flaccid paralysis while alertness is maintained. **All forms can be fatal and are considered medical emergencies.**

** For clarity, these protocols address only foodborne botulism which is the form of the disease with public health significance and the form which would be observed in the case of a bioterrorist act involving botulinum toxin. Wound botulism and intestinal (infant) botulism are also reportable and the process for obtaining antitoxin from the CDC is the same as for foodborne botulism. More information on these forms is available in the CCDM by Chin.

Organism: Botulism is caused by neurotoxins produced by *Clostridium botulinum* which is a spore-forming obligate anaerobic bacillus. Spores are ubiquitous in soil worldwide.

Laboratory Test(s): Serum, stool, gastric aspirate, or implicated food source specimen for demonstration of botulinum toxin. Stool or gastric aspirate for culture is helpful but not as definitive as demonstration of the toxin. KDHEL does not provide testing. Specimens must be sent to the CDC laboratory (see supplemental forms).

Treatment: Treatment is complex and must be done in a hospital by a qualified physician. Treatment will include polyvalent antitoxin which can only be obtained from the CDC (see "Reporting Requirements" below). It will include supportive therapy, possibly involving life support in an intensive care unit.

Incubation Period: Neurologic symptoms usually appear 18-36 hours after eating contaminated foods, but may appear as early as 6 hours or as late as 10 days after ingestion.

Mode of Transmission: Naturally occurring disease is acquired by ingestion of food containing preformed toxin produced by the organism in the food. Human disease usually results from ingestion of toxins produced by the organism growing in inadequately processed and/or cooked foods. The toxins are destroyed by boiling. Higher temperatures and pressure are required to inactivate the spores. Contaminated wounds where anaerobic conditions develop (such as a puncture wound or injection drug use) are also rarely a source of disease. Intentional cases (homicidal or bioterrorist) could be caused by the deliberate contamination of a food or beverage with toxin, or the exposure of multiple victims to toxin by release of an aerosol.

Period of Communicability: Person-to-person transmission is not documented.

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Susceptibility: Susceptibility is general.

Occurrence: Most cases in the U.S. are the result consumption of inadequately processed home canned foods with low acid content, such as asparagus, green beans or corn. Although meat products and commercial products are uncommonly involved in botulism cases, either may occur and neither should be overlooked in an investigation.

Outbreak criteria: A single case should be actively pursued to determine whether there is an outbreak with unidentified cases having been exposed to the same contaminated food. The situation should be treated as a public health emergency until additional cases and the possibility of unidentified contaminated food has been ruled out. A suspect case should be treated as a confirmed case for public health purposes until the diagnosis of botulism has been clinically ruled out.

Surveillance Case Definition:

Clinical criteria: A neurological disorder of variable severity involving various of the following signs or symptoms: diplopia, blurred vision, dysphagia, and descending symmetrical motor weakness or paralysis.

Laboratory criteria: Detection of botulinum toxin in the patient's serum, stool, or food, or the isolation of *C. botulinum* in the stool.

Definition of a contact: Until a specific food item has been incriminated, anyone who has shared food with a case within 5 days prior to onset of symptoms should be considered a potential contact. Once a specific food has been identified as a likely source of contamination, those individuals known to have ingested that food product would be considered as contacts.

Case Investigation: ***All cases of botulism should be treated as a public health emergency.***

The case investigation should initially focus on gathering the information necessary to complete the CDC Botulinum Antitoxin Request Form. This information will be necessary for the KDHE Epidemiologist and/or the patient's physician to obtain the antitoxin from the CDC as soon as possible.

Investigation should also include: a detailed five-day food history of the case and suspect cases; a search for additional cases; and an effort to recover and secure any suspected foods for testing and/or disposal.

Methods of Control: Regulate commercial food processors to ensure adequate processing of commercial food products. Educate the public about proper processing of home canned foods, and proper cooking of all canned food products. The toxin is destroyed by high temperatures and boiling food for 10 minutes before eating will ensure safety. Because honey can contain *C. botulinum* spores, children under 12 months old should not be fed honey.

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Isolation: None

Quarantine: None

Follow-up: Any suspected or confirmed contaminated food, home-made or commercially prepared should not be consumed.

Cases: None

Contacts: Individuals known to have eaten an incriminated food product should be under close medical supervision. Treatment would involve cathartics, gastric lavage, high enemas, and consideration for receipt of antitoxin.

Reporting Requirements:

1. Report immediately by telephone to 1-877-427-7317 as a public health emergency.

2. Complete the CDC Botulinum Antitoxin Request Form and immediately FAX it to the KDHE, or provide the KDHE Epidemiologist with the information necessary to complete the form. Ant-toxin will be quickly delivered once botulism is confirmed or suspected.

3. Serum, stool, and food specimens should be collected for submission to the CDC Botulism Laboratory. See the CDC Botulinum Antitoxin Request Form for details of how and where to send specimens.

4. Complete Kansas Notifiable Disease Form (KNDF) or enter into HAWK.

5. FAX KNDF to: 1-877-427-7318, or 785-296-3775

6. Mail KNDF to: Epidemiologic Services Section - KDHE
   Landon State Office Building, Room 1051S
   900 SW Jackson Street
   Topeka, KS 66612-1290

7. For technical assistance questions, call 1-785-296-2951.

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Special Considerations for Bioterrorism:

Identification and Reporting:

The following contact numbers are staffed 24 hours a day, 365 days a year. If there is a suspicion that this case(s) is due to an intentional act, contact in order of priority as shown.

1. Kansas State Epidemiologist: 785-249-8903

2. KDHE Epidemiologist On-Call: 1-877-427-7317

3. CDC Bioterrorism response coordinator hotline: 404-639-0385

Likely Bioterrorist Scenarios:

Botulinum toxin could be used to deliberately contaminate foods or beverages at various points in the food production or distribution system, resulting in a contaminated shelf product with variable distribution, or at a point of service such as a restaurant.

Botulinum toxin could also be released as an aerosol to be inhaled by the victims. In this case the disease would present similarly to Food borne botulism, although the time to onset of paralysis may be longer with aerosol exposure.

Safety Considerations for Public Health and Other Health Care Professionals:

None

Event Response/Control Measures:

Whether a bioterrorist event is announced or unannounced, local public health officials should play a central role in the event assessment and response and in the determination of appropriate control measures.

Definition of the population-at-risk:

> This will be crucial task in such a situation, and will be essential to guide response activities. Public health authorities will play the lead role in this effort, but will consult with law enforcement, emergency response and other professionals in the process. The definition of the population-at-risk may have to be re-evaluated and redefined at various steps in the investigation of, assessment of, and response to a bioterrorist event.
>
> Because of the potential circumstance of unidentified contaminated shelf products continuing to expose victims, emphasis must be placed on early identification and removal of the vehicle. Once a mechanism and scope of delivery have been postulated (whether Food borne or aerosol), asymptomatic and potentially exposed individuals can be identified and evaluated for possible receipt of antitoxin. Because there is no person-to-person transmission, the population-at-risk will not expand from transmission but may expand with case-finding efforts.

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Event Response/Control Measures (cont.):

Control measures which should be addressed are:

Decontamination:	Decontamination should not be an issue with either BT scenario. However, all amounts of an incriminated food products must be identified and secured to prevent continual human exposure to toxin.
Post-exposure prophylaxis:	See "Follow-Up" above for management of contacts.
Isolation:	None
Quarantine:	None

Other public health activities:

Line lists:	A central responsibility of the LHD staff is to maintain detailed line lists of cases, suspect cases, and contacts with accurate identifying and locating information as well as appropriate exposure and other relevant epidemiological information.

Pharmaceuticals:

In the event of an outbreak of botulism, polyvalent botulinum antitoxin will be procured from the CDC National Pharmaceutical Stockpile Program. Procurement, storage, and distribution will be coordinated through the Kansas Department of Health and Environment.

Use of pharmaceuticals:	Local and state public health officials must play a central role in determining which public health workers, health care workers, law-enforcement workers, emergency workers, and other essential personnel should have priority in receipt of limited pharmaceuticals.